(100)輔仁大學碩士班招生考試試題	考試日期：2011 年 3 月 18 日第 3 節
	本試題共 1 頁 (本頁為第 1 頁)

科目：計算機系統　　系所組：資訊工程研究所

中 英 文 作答 均可　※ 注意： 試題須隨答案卷繳回。

1. (10%) Explain the idea of "virtual machine" as well as the advantages of using it.
2. (10%) Explain the idea of "thread" as well as the advantages of using it.
3. (10%) When considering deadlocks, what are the differences between "deadlock prevention" algorithms and "deadlock avoidance" algorithms?
4. (10%) When considering memory management, among the first-fit, best-fit, and worst-fit algorithms, which one (or ones) will suffer from the "external fragmentation"? You need to explain the reasons.
5. (10%) Explain the differences between the "NAS" and "SAN"?
6. (10%) What is the approximate number of 20 by 50 mm dies per 12-inch wafer?
   What are the advantages of a smaller die size?
7. (10%) What are the features and advantages of a load-store architecture?
8. (10%) If a CPU has 4 cores, each core has 2 threads, each thread has 3 pipelines, each pipeline has 5 stages, what is the maximum IPC(instructions per cycle) for this CPU?
   What is the maximum IPC(instructions per cycle) for this CPU when executing a single parallel program?
9. (10%) What are the three categories of misses in a memory hierarchy? How can each type of misses be reduced?
10. (10%) What are the advantages and disadvantages of SSD(solid state disks) compared to hard disks?
    What is the wear leveling technique? Where is the wear leveling technique needed?